cycles

January 1956

FOUNDATION FOR THE STUDY OF CYCLES
New York, New York

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cycles

The official Bulletin of
the Foundation for the
Study of Cycles

VOLUME VII NUMBER 1 JANUARY 1956

The Director's Letter

Dear Member:

Once, when I was young, I was taken through the house of an old Pittsburgh millionaire. He had, I think, been one of Carnegie's lieutenants. Everything in the house was characterized by heavy handed elegance. I remember the imposing stone entrance. I remember the massive furniture. Particularly I remember the bathroom. It was an enormous room. It had two of everything. It had two large wash basins. It had two huge bathtubs. And, cosily, side by side, it had two old fashioned Johns.

Director Drafted

This story comes to mind because at this juncture your Foundation needs two Directors! The one who is writing this letter has been drafted—not for war but for peace.

How it Came About

President Eisenhower and his staff know as well as any group in the world—and better than most—that the prevalence of international conflict fluctuates in cycles. There are decades when the world has had very few international conflicts. (We are on toward the *end* of such a decade at the present time.) There are decades when international conflict has been severe. (The decade ending in 1945 is a good example). The curve of conflict goes up. It goes down. *Then it goes up again.* (It has already started up.)

Probably nothing in the world can prevent the curve from rising in the future. However, the whole strength of the President and of the United States Government is dedicated to *bending* the curve of conflict so that, if possible, it will go up *less* than it otherwise would—so that, if it has to go up, it will go up at least short of all out war.

If the curve of conflict is to be bent, we must know all we can about it.

War Curve Rhythmic

Now one characteristic of the curve of international conflict is that its cycles are *rhythmic*. That is, for the last two thousand five hundred years at least, the ups and downs have tended to come at more or less regular time intervals.

Are these rhythms significant? Will a further knowledge if them aid in predictability? Do they suggest factors in international conflict not now generally under stood or taken into account?

As part of the whole program (of keeping the stew from boiling over) I have been asked by a person who cannot be denied to spend what time may be necessary during the next year or so to try to find out.

Two Directors Needed

This fact brings us back to the statement I made at the beginning. Our Foundation needs two Directors. We need one

Director to contribute his two bits to the peace program; a second one to carry on the routine activities of the Foundation, write the monthly report, sweep the floor, put out the cat.

As I don't know how to be twins, something is going to have to give. Naturally it will have to be the routine activities. This will occasion some changes.

Changes to Come

One change is, we are going to have to cut down the number of pages in *Cycles*. Partially to offset this reduction of pages we are going to *increase* the number of issues. Henceforth you will get *twelve* reports a year instead of *ten*. This means that from now on you will get the Geisinger Indicator every month. I will write you a letter every month, too.

It looks as if things might unfold something like this: We plan to issue regular reports bi-monthly. The regular reports will be more or less like this one. Next month the report will consist merely of The Director's Letter, the Geisinger Indicator, and any additional material I have time to put together. Then will come a regular report again, etc.

One good thing about the change is that it will enable me to meet many of you in person. I shall be traveling extensively for conferences with various scientists and statisticians. This travel, on its part, will make it possible for me to arrange a series of informal off-the-record dinner meetings for members and their friends. I shall hold these meetings in as many as possible of the major cities. In going from city to city I will be able to call on a good many members in smaller places too.

I get a great deal from such meetings. And, based on past experience, I can say that our members seem to like these get-togethers, too.

Decimal Points

Did you notice an error of decimal points in Case II of the table published on page 271 of the November report? All values in Case II were supposed to be half of the corresponding values in Case I. They were—except that most of the decimal points were misplaced! (The table is republished with correct decimals on page 24 of this issue.)

I am reminded of the story of Lord Randolph, as reported by Sir Josiah Stamp, and quoted by Croxton and Cowden, It is as follows:

"A periodical return of revenue received into the Exchequer was laid before Lord Randolph, and his private secretary, Mr. George Gleadowe of the Treasury, was looking over his shoulder, and Lord Randolph expressed satisfaction at the fact that the Customs revenue had increased by 34 per cent as compared with the corresponding period in the preceding year. Mr. Gleadowe pointed out to him that it was only .34 per cent. "What difference does that make?" asked Lord Randolph. When it was explained to him he said, 'I have often seen those damned little dots before, but I never knew until now what they meant."

The episode also reminds me of the time I was trying to hire a bookkeeper.

"Are you good at computing percentages," I asked.

'Well," said the sweet young thing, 'I think I understand about *six* percent—but I'm not so sure about the others!"

Cordially yours,

Edward R. Dewey

Director

THE 1956 POSTSCRIPT
TO
CYCLES-THE SCIENCE OF PREDICTION

PART II RHYTHMIC CYCLES

THIS article will attempt to present the case for rhythmic cycles. It will be long. It will exceed the space available in this issue. It will be continued in later reports.

Suppose I start with a story.

Last spring Catherine, my wife, and I were out for a Sunday afternoon drive with our friends Robert and Genevieve Steele. The girls saw some wildflowers up on a hill so of course we had to stop. Robert and I stayed in the car and let the traffic whiz by.

A Traffic Problem

“Did you ever notice how traffic always seems to go in bunches?” said Robert.

“Yes,” I said, “I suppose some old slow poke holds up the procession and traffic dams (damns) up behind him because the folks can't get past. Then, after a while, there is another slow poke who dams up another bunch of cars. And so on.”

“Could be,” he said.

“And you'll get things in bunches just by chance, too,” I said. “You know—just like five or six heads in a row when you're matching pennies.”

“I wouldn't know,” said Robert. “I'm virtuous.”

We watched the traffic for a while and then Robert said, “These bunches look pretty regular to me. “Lets time 'em.”

We did. The first four bunches came 37, 39, 35, and 38 seconds apart. “Isn't that too regular to be the result of chance?” said Robert. “I should think there might be a stop light around the bend ahead.”

A Few Times Don't Count

“Not necessarily,” I answered. “It's easy to get regularity a *few* times as a result of chance. Lets see if the regularity continues.”

We continued to count. The next bunch was 74 seconds, the next 24, the next 59, the next 37.

“See what I mean?” I said. “The regularity we saw to start with just happened so. It didn't mean a thing. I'm always hammering at my correspondence course students not to get excited about a few repetitions of a cycle. A cycle has to repeat lots of times, before you can be sure you've got something.”

“Tell me about your cycle work” said Robert.

The Cycle Work

“There isn't much to tell,” I answered. “Its pretty simple. In fact,” I went on, “it isn't much more than we were doing with the cars a few minutes ago. Things come in bunches. When these bunches—of things, or of high prices, or of anything else—come at reasonably regular time intervals, we get what are popularly called cycles.

“Of course our work shouldn't be called cycle work at all. The word ‘cycle’ merely means coming around again to the place of beginning. As you doubtless know, it comes from a Greek word meaning *circle*. Any old state of affairs that comes back to the place it started from is a cycle. You know, dust to dust, and all that sort of thing. I deal with a special kind of cycle where the coming-around-to-the-same-place comes at reasonably regular time intervals. The essence of it is time. I should call our work 'rhythm work,' instead of cycle work. The word rhythm, as I suppose you also know, comes from another Greek word meaning *measured time*. A rhythm is therefore something that repeats with a beat—just like those bunches of cars we were watching a few minutes ago."

Rhythms

"Then why don't you call your outfit the Foundation for the Study of Rhythm," said Robert.

"We did think about it, but we decided against it for several reasons. One of these is that *rhythm* sounds a little bit like a hoochie-coochie dance—you know, 'I got rhythm, you got rhythm, everybody got rhythm.' A second reason was because Catholics use the term to describe a special sort of birth control, and we didn't want to get mixed up with that connotation. But I suppose the real reason was that we were afraid no one would know what we were talking about. However, if we had it to do over again I think we might call it 'Foundation for the Study of Rhythm,' notwithstanding."

Time Involved

"The whole business is tied up with *time*. A few things can come at reasonably regular time intervals very easily as a result of chance, but if chance is the *cause* they won't continue to come that way for very long. When you get a lot of things—earthquakes, or rainy days, or anything else—which come at regular time intervals for *many* repetitions you have *got* to look for some regulating factor. For example, if these cars we timed had *continued* to come at 37 or 38 second intervals, we would have been forced to conclude that something beside chance had entered the picture. You would have been right about a stop light up ahead timed for 37 seconds."

"But *do* things come like that regularly time after time?" said Robert. "I never could see much regularity in the charts I have looked at."

"Yes they do, I've hundreds of examples." I said, "Wait until we get back to the house and I will show you some of them," I added as the girls returned to the car.

An Impressive Chart

When we got back to the house I showed Robert one of the most impressive charts I have. It records 59 repetitions of a 9.18-month cycle in the ton-miles of the Canadian Pacific Railway (presently I'll show it to you, too).

"I don't see anything particularly regular or startling in that," said Robert.

"Good heavens, man," I said. "Its beautiful! I guess you just don't know what to look for. Here, let me show you.

"Here is a chart diagramming a perfectly regular zigzag cycle, (a *perfectly* regular cycle is called a periodicity). This one has an amplitude of plus and minus 80" (I've reproduced the chart I showed him as Fig. 1 below.):

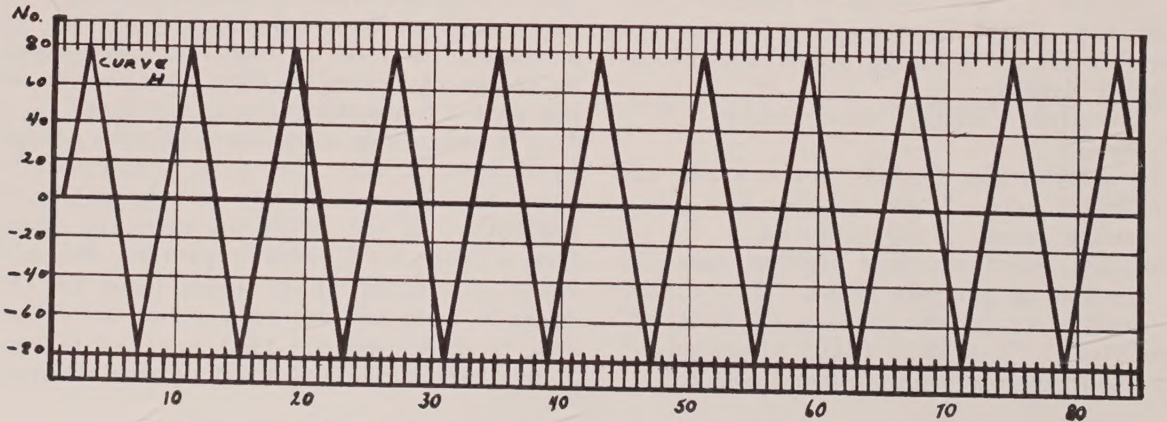


Fig. 1. A Perfectly Regular 8-Month Cycle with Amplitude + and - 80.

"What do you mean 'amplitude'?" said Robert.

"Amplitude is a technical term used by statisticians to mean the height of a curve above or below its axis. The axis is that horizontal line in the middle that the curve goes above and below."

"I know what an axis is, but why do you say curve?" said Robert. "These things are straight lines."

"Yes," I said, "but statisticians call any line on a chart a curve.

"Funny people!" said Robert.

Random Numbers

"Now here is a chart of some random numbers. (Fig. 2)

These are the actual amounts by which the sales of a certain manufactuer were above or below trend, only arranged in random order. The first number plotted might have been the sales for his 139th month. The next number might have been the sales for his 92nd month, and so on.

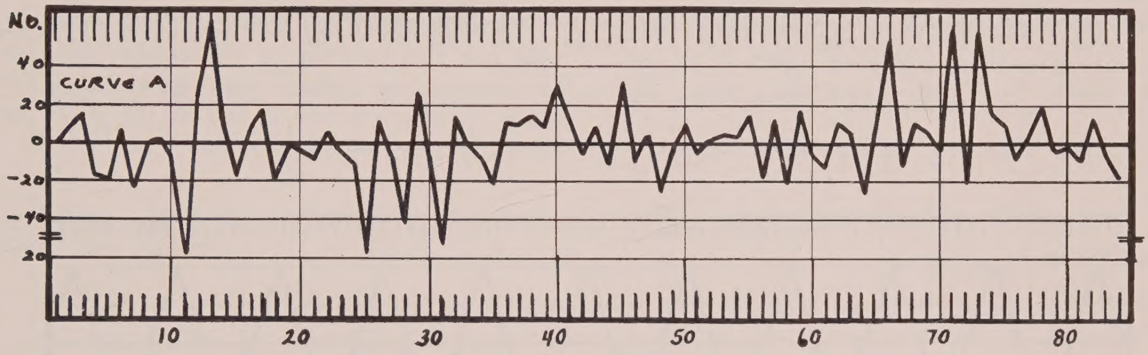


Fig. 2. Random Numbers.

"Now here we have a chart of these two curves, combined," I continued. "Technically that creates a rhythm, but popularly it's called a cycle, and so is a periodicity."

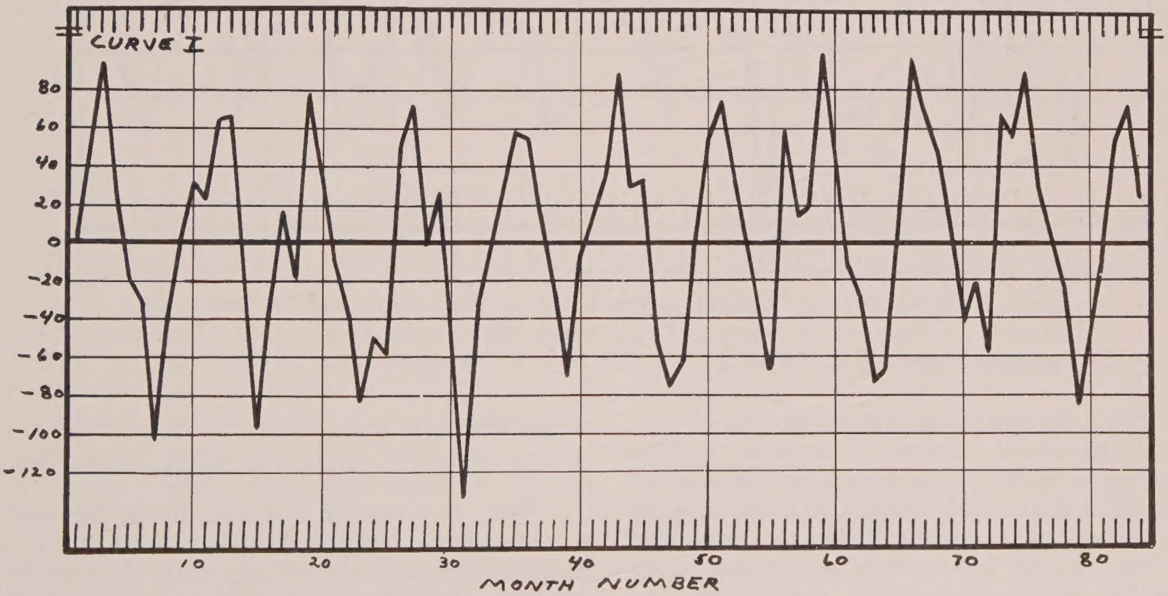


Fig. 3. Sum of 8-Month Cycle with Amplitude,+ and - 80 and Randoms (Curve H & Curve A).

“How did you combine them?” said Robert.

Combinations by Addition

“Why, I just took the values of the cycle for the first month and the value of the random for the first month and added them. The cycle value for the first month was 0, the random 1. The combined curve is therefore 1 plus 0, or 1. Then you add the values for the second month: 40 for the cycle and 9 for the random to make 49, and so on.”

“That seems easy,” said Robert.

“It is,” I said, only in real cycle work you multiply them together instead of adding them. However, lets skip that for now.

“Notice that the randoms kick the cycle around a little but its still very regular. Some of the peaks, like the first one, are made bigger. Some, like the second, are made smaller. Some, like the second, are delayed. Some, like the ninth, are advanced. And of course the same is true for the troughs. On the whole, though, the cycle shows through pretty well. It reminds me of a real estate activity chart I'll show you in a minute.

A Weaker Cycle

“Now suppose we keep the randoms the same and the *lengths* of the cycle the same, but suppose we reduce the amplitude of the cycle from plus and minus 80 to plus and minus 40. The result is shown in Fig. 4.

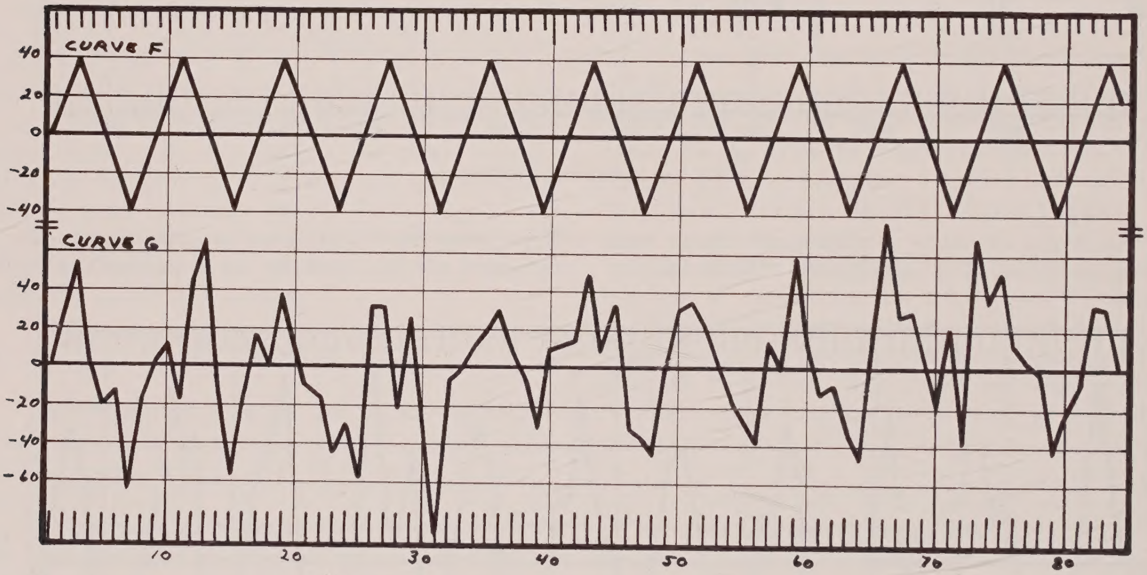


Fig. 4. Curve F. A Perfectly Regular 8-Month Cycle with Amplitude + and - 40.
Curve G. A Perfectly Regular Cycle with Amplitude + and - 40, Together with Randoms (Curve F + Curve A).

“The ± 40 cycle is shown as Curve F. The combination of the cycle and randoms is charted Curve G. Here you get something even more distorted. Note for example that the second *cycle* crest falls at position 11, yet in the *synthesis*, position 11 is actually below the axis. You've got to learn to look at *areas*. *Areas* above the line. *Areas* below the line.

“It's a little hard to see at first,” said Robert.

How to Look for Cycles

“Yes, but you've *got* to if you want to find cycles. Look,” I said, taking up a pencil. “Here's what I see when I look at a curve. I look at it either from low to low like this, saying ‘Low, Low, Low,’ as I go across the page:

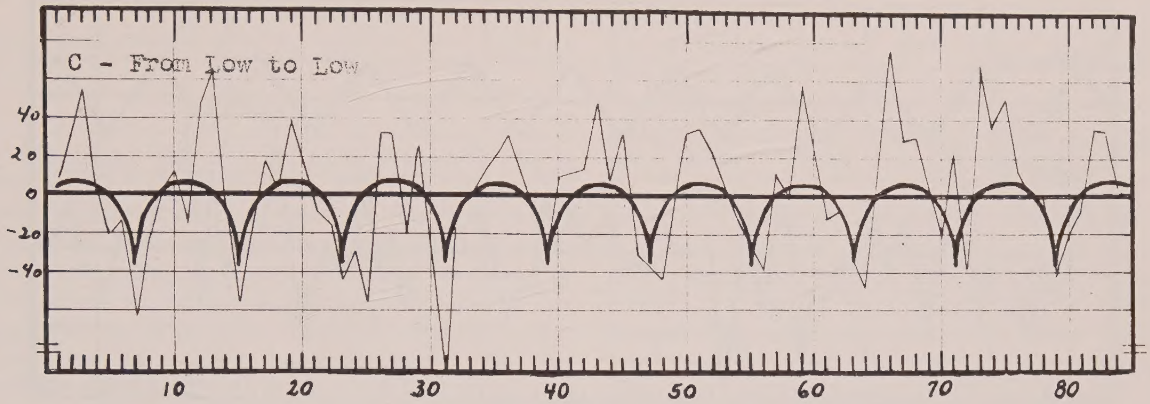


Fig. 5. The Path of the Trained Eye as it Scans Curve G of Fig. 4 from Low to Low.

Or I look at it from high to high like this, saying 'High, High, High,' as I go across the page:"

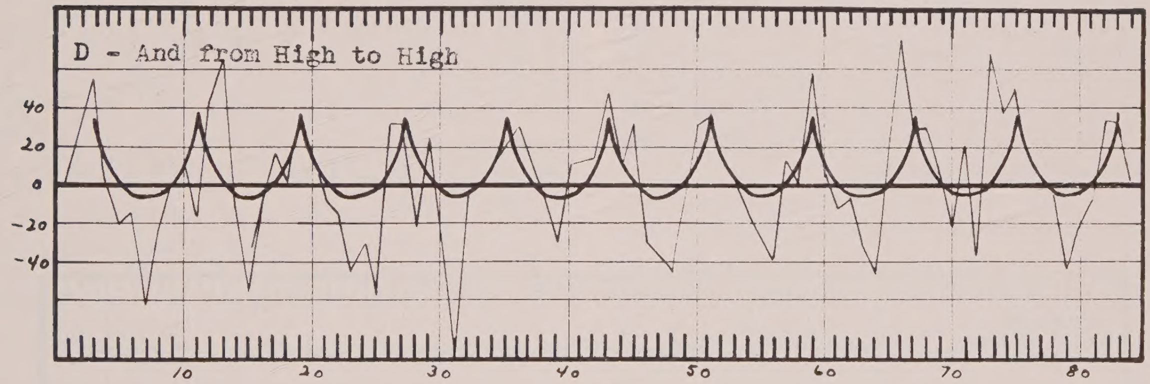


Fig. 6. The Path of the Trained Eye as it Scans Curve G of Fig. 4 from High to High.

"Actually, in practice I look at it both ways. First one way, then the other. If I were smart enough I'd look at it both ways at once, but I'm not.

"I see what you mean," said Robert, "but even knowing what to look for I don't think I could see much regularity in the charts I see from time to time. Here, where you put the regularity in, you *ought* to be able to see it."

A Still Weaker Cycle

"I've been giving you practice material purposely made easy." I answered "Look at something a little harder. Something more like what you would get in real life. Here are the same randoms and a cycle of the same length—8 months—only now the amplitude of the cycle is only ± 20 instead of ± 40."

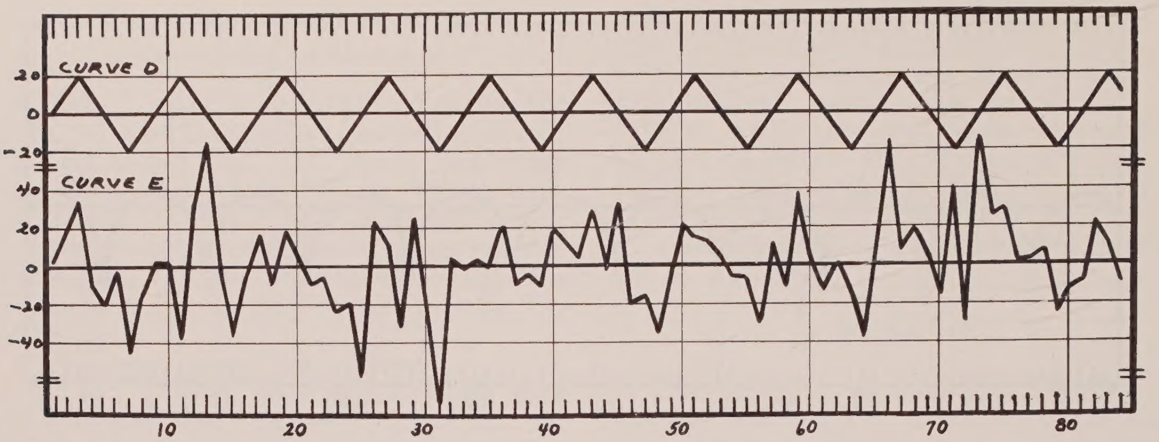


Fig. 7. Curve D. A Perfectly Regular 8-Month cycle with Amplitude + and - 20.
Curve E. A Perfectly Regular Cycle with Amplitude + and - 20, together with randoms (Curve D + Curve A).

"Yes," said Robert, 'but with waves as irregular as this—couldn't you get them pretty easily just at random?"

"Yes," I answered.

How Do You Know It Isn't Random?

'Then," he said, 'how can you tell—if you don't know in advance as you do here—how can you tell in the sales of the XYZ Company for example, if the cycle is really there, or if you're just reading it out of your imagination as people do when they see whales and islands and lions and things in the clouds?"

"I'll tell you, but bear with me just one moment and let me show you just one more chart. Then I'll try to answer you question.

A Very Faint Cycle

"Here is s chart where we have the same randoms and the same 8-month cycle with an amplitude of ± 4. We started with ± 80. Then we shrank it down to ± 40, then we shrank it down to ± 20. Now its ± 4, 1/20th of what we started with. You know it's there, but I defy you to detect it by mere inspection. It has to be detected mathematically. But it *can* be detected mathematically, if your string of figures is long enough.

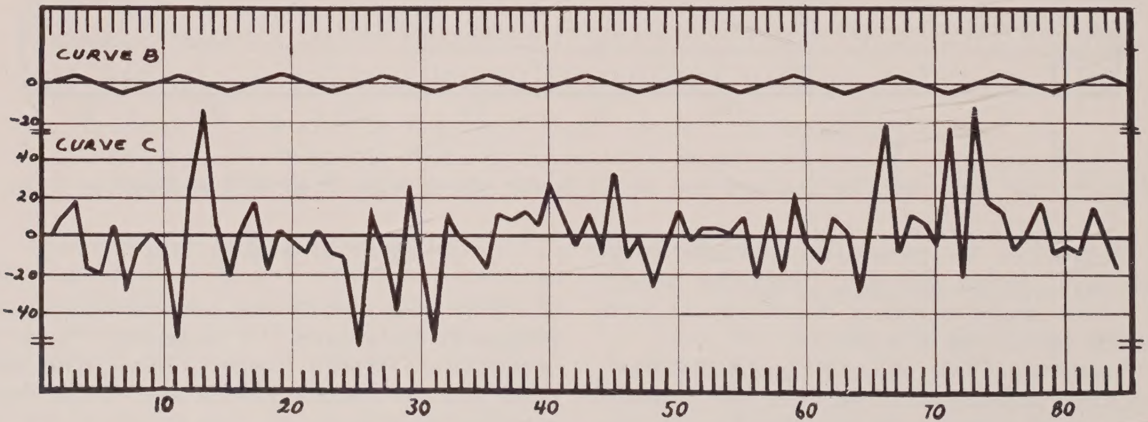


Fig. 8. Curve B., A Perfectly Regular 8-Month Cycle with Amplitude + and - 4.
Curve C. A Perfectly Regular Cycle with Amplitude + and - 4, together with randoms (Curve B + Curve A).

"Well, enough of that. Now lets get back to your question, would you repeat it?"

A Question

"How can you tell," said Robert, "in a real string of figures, if the cycle is really there, or if you're just having fun with figures? That is, how do you know that the thing you are dealing with—say the price of eggs—was batted about by randoms *and* a cyclic force? How do you know that it wasn't just batted about by random forces which just happened to interplay in such a way as to produce something which, with a great deal of imagination, looked a bit like a cycle?"

"Well, you can't for *sure*," I said, "But you can made a pretty good stab at it.

"First of all, chance won't give you very many repetitions of a cycle. It'll give you a few repetitions, perhaps, but not many. How many depends upon how much regularity you demand. The more tolerant you are about regularity the longer succession of cycles you can find in random numbers."

"Well," said Robert, "take the one I asked about—the one with an amplitude of ±20. How many repetitions of a cycle as regular as that could you get purely by chance?"

"You can't put it quite that way. Its a matter of probability. You could get five repetitions once in about ten times. But you couldn't get ten repetitions more than once in 100 times. And you couldn't get 15 repetitions more than once in 1,000 times."

"Then," asked Robert, "if I had a string of figures in which I found 10 or 15 repetitions of a cycle as regular as that I could be pretty sure it was a real cycle?"

"Yes," I said, "according to the best tests so far developed, it couldn't come about by chance alone more often than the figures I've given you.

"And now you see the first way to tell if the behavior is random. If the cycle repeats 8 or 10 or 15 times it isn't likely to be chance.

More Regular, Fewer Repetitions Needed

"Of course this isn't a rigid number. If the cycle is more regular, fewer repetitions would do. If it is less regular it would take more. But this will give you some idea."

"You said there were several ways of getting a line of whether a cycle is real," said Robert. "What are the others?"

Real vs. Significant Cycles

"If you don't mind my being a bit captious, let me pick you up on that word 'real'," I said. The cycle in the random numbers is just as *real* as any other cycle—only it isn't *meaningful*—it isn't what the statisticians call *significant*. Its just as well to keep the difference clear. There can be no argument that there are cycles—rhythms—in the charts and figures we all look at and deal with. The argument is, do these cycles *mean* anything.

"But to answer your question," I continued, "I can give you five other reasons for thinking that at least some of the cycles we find are significant. However, I don't want to bore you with a lecture and I do want to show you some charts before the girls call us for supper, so I'll give you only one more right now.

"The cycles you find in random numbers just don't, as a rule, keep on coming true after discovery. So, if you find a cycle in some numbers and if it keeps on coming true after you find it, it strengthens the case for the significance of the cycle.

Cycles Keep on Coming True

"The reason I bring this up at this point is that some of the charts I want to show you show cycles which were discovered some time back. If these cycles have continued we have two reasons for believing the cycle to be meaningful. One, that the cycle repeated a lot of times—two that the cycle kept on coming true after discovery."

"What's the longest time any cycle has kept on coming true after discovery?" interrupted Robert.

"Well, outside the cycles of the sun, the moon, and the stars, I'd say about 80 years. That is, cycles discovered about 1870 are still coming true. But, if you'll forgive me, that isn't the way to ask the question. It isn't how *long* the cycle continues to come true. It's how many *times* the cycle continues to come true. If a 5-month cycle continues five times—25 months—it's just as significant as if a 5-year cycle were to continue for 25 years or a 50-year cycle were to continue 250 years. Its the number of *times*. Don't you remember the poem—‘“I'm just as big for me,” he said “as you are big for you!”’? It's that way with cycles, too.”

“Now let's see, where were we? Oh, yes. I was going to show you more examples of cycles which have repeated so many times they can't reasonably be the result of chance.”

“Before you start please satisfy my curiosity,” said Robert. “You said there were a total of six reasons for believing that at least some cycles were not the result of chance. Would you just name them?”

“Certainly,” I said.

“1. It would be very hard, by chance alone, to have cycles repeat time after time. But there are cycles which do. Hence, they cannot reasonably be the result of chance.

“2. It would be very hard, by chance alone, to have cycles continue after discovery. But there are cycles which do. Hence, etc.

“3. It would be hard, by chance alone, in seemingly unrelated things, to have cycles of the same wave length, yet we find this state of affairs often.

“4. It would be hard, by chance alone, in seemingly unrelated things, having cycles of the same wave length, to have the cycle's turning points come at more or less the same time, yet this behavior is the rule rather than the exception.

“5. If cycles were random you'd expect the wave lengths of the different cycles to be all over the lot--that is, the wave lengths would be totally unrelated to each other. Instead of this we find *families* of cycles, with wave lengths related by simple arithmetic ratios.

“6. We find a definite tendency for the time of the turning points of particular cycles to come later and later

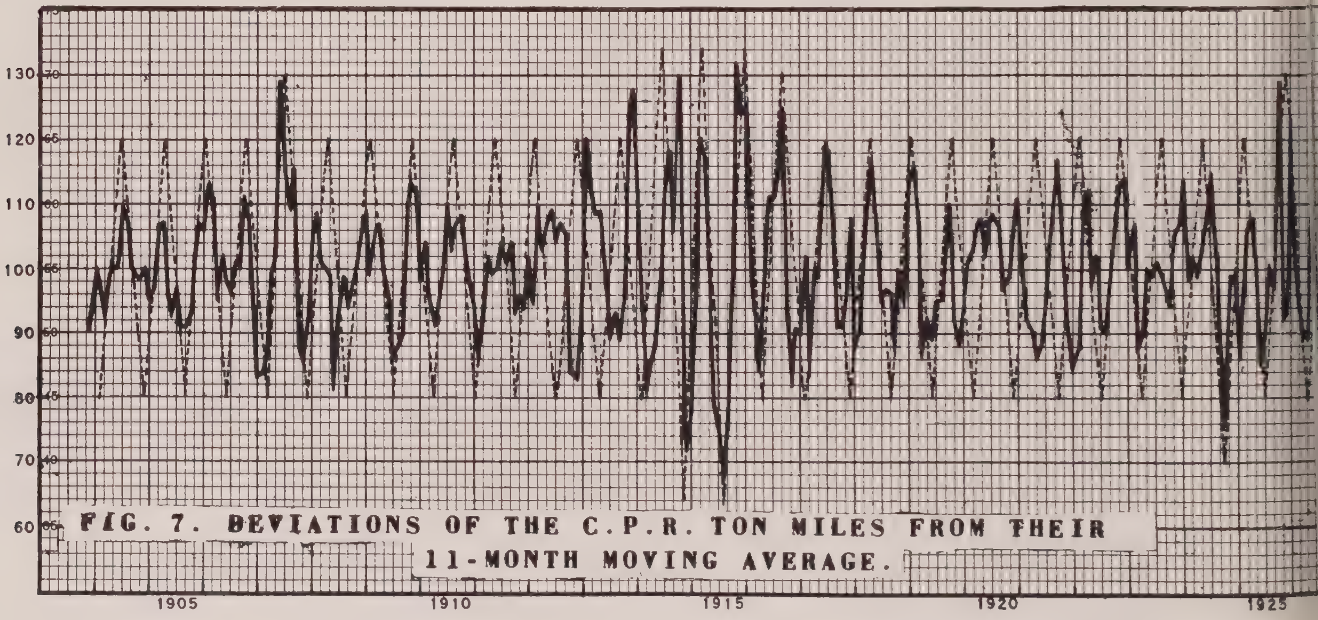


FIG. 7. DEVIATIONS OF THE C.P.R. TON MILES FROM THEIR 11-MONTH MOVING AVERAGE.

FIG. 9. THE 9.18-MONTH CYCLE IN CANADIAN PACIFIC

The solid line shows the percentages by which the deseasonalized to
The broken zigzag line diagrams a perfectly regular 9.18-month cycle.
This cycle was isolated in 1942. Note war distortion. Note how fro

as the cycle is found in various places from either pole toward the equator. This is called latitudinal passage. Not many cycles have been studied for latitudinal passage, but those that have been do behave this way. It's hard to believe that such behavior could be the result of chance."

"That word *chance* troubles me," said Robert. "There really isn't any such thing. *Everything* has a cause."

"*Chance* doesn't mean it doesn't have a cause. It means that the causes are too complex to unscramble—that they are not systematic. If you toss a penny and it comes up heads, there is a *cause* for its being heads and not tails, including, like as not, what you ate for dinner. But the cause and effect relationship cannot be followed. In the long run we get as many heads as tails, and we call the behavior randoms or chance.

"But if you don't stop asking questions," I said. "I never will get to my charts. The girls will call us to dinner. And then where will we be?"

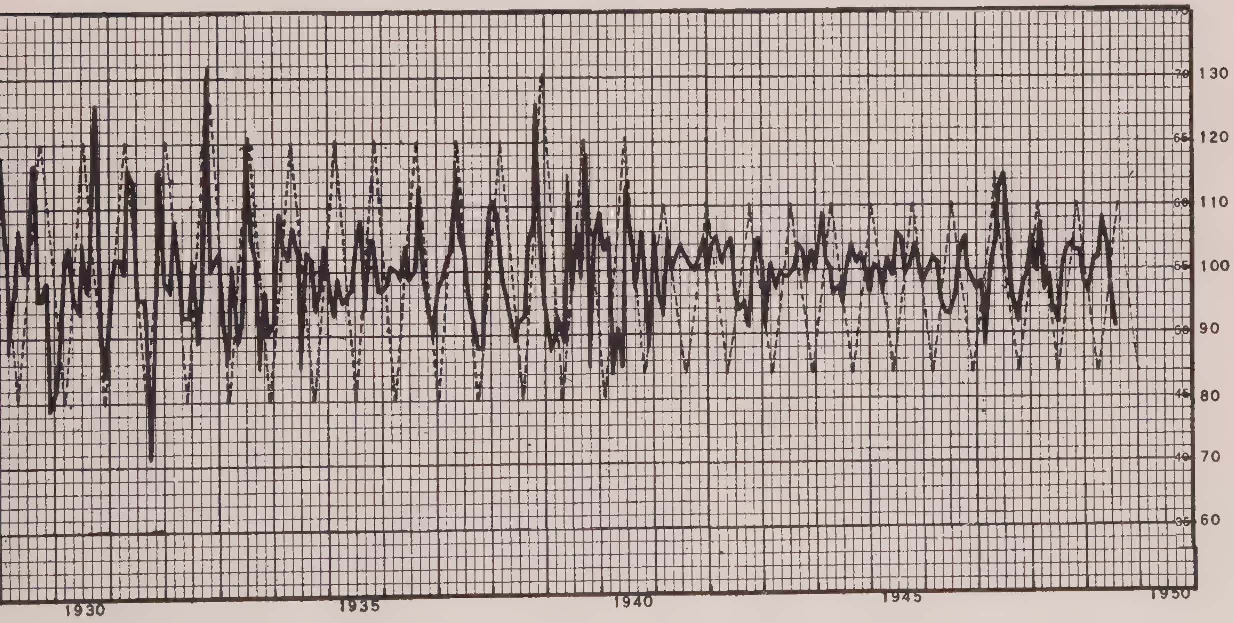
"There's always another Sunday," said Robert, "but I'll be good—for a little while!"

"Well, here we are back at the chart I started out with," I said "the ton-miles of the Canadian Pacific Railway (Fig. 9 below). You know what ton-miles are, of course."

"Yes," said Robert. "The number of tons of freight times the number of miles each ton is hauled—or something like that."

"Well, if you take the ton-miles for each month from 1903 and adjust them for trend and for the 12-month or seasonal pattern and plot them, what you get is this chart here."

"Of course there's a lot of difference in amplitude or strength between the different waves but don't pay any attention to that. I'm not talking right now about anything but *timing*. Look how those waves march right across the page, wave after wave, for *fifty-nine times*! The broken line diagrams a true 9.18 month perio-



TON MILES OCTOBER 1903—JULY 1949

igures are above or below their 11-month moving average trend.
ave been 59 repetitions of this cycle
orward the cycle reasserts itself.

dicity. Can you conceive of finding a pattern as regular as that repeating as many times as that in random numbers? Its fantastic even to think of!"

"Of course there are distortions. That's to be expected. There are other cycles, also operating in this series. And there are randoms too. But *after distortions the pattern always snaps back into step!*

"That's fallacious argument,'' said Robert (who used to be a college president before he retired a year or so ago). "*You* chose the 'step' after the event and you chose a step—that is, a wave length—that would fit pretty well both before and after the distortion. You are arguing in a circle."

"If you pick me up on my *words,* yes,'' I said. "But, *fundamentally,* no. The point is that if these were random waves you couldn't find any single wave length that would fit the behavior before and after not only one but several distortions, and over as many repetitions. Right?"

"All right. I agree."

"Incidentally, I might say that you are the first person to whom I have explained this cycle business in the past 18 years who caught that point.''

"Now look at this chart a little more closely. Starting in 1903 and looking from low to low we have low, low, low, low, low, low, low, low, low—all good to 1912. Then a couple of late lows, then, in 1914 back on the track again. On the track right through the war! Low, low, low, low, low, low, low, low, all good to 1920. Then one early and two late. Then two good ones. Then one upside down. Then low, low, low, low, low, low, low, low, low, low, low, low, low, low—remember, I'm talking about *areas* now—all good to 1934. Then one upside down. Then low, low, low, low, low, all good to the outbreak of war in 1939."

"In World War II the cycle vanished, in contrast to World War I, when it was intensified. But note this, *this cycle in these figures was discovered in 1942.* After the war it reasserted itself on the same time schedule—same wave length, same calendar timing!"

"Remarkable!" said Robert. 'You discovered this cycle in 1942, did you say?"

"Oh no! I didn't discover it,'' I answered. It was discovered by Meredith Rountree, the C.P.R. statistician. The company sent him down to New York to work at Foundation Headquarters for a year to see what he could turn up. Forward looking chaps, those Canadians, eh what?"

"Were they impressed?"

"I'll say they were! Why, the comptroller said—forgetting for a minute they also have a seasonal or 12-month pattern—'We ought to keep our books on a nine-month basis so we could in each case compare ton-miles with nine months before!'"

"Very, very, remarkable," said Robert. "Fifty-nine times you say?" I nodded. 'How has it worked since 1949?"

"I haven't the remotest idea," I answered, "I just don't have time to keep up with things. This darned report I have to write for our members keeps me tied down so I don't have time to do anything."

"Yes, I always found dead-lines pretty onerous," said Robert. 'Do you have a chart of the actual figures before adjustment for trend? Can you see the cycle in it too?"

"Oh, of course you can, after you adjust for the seasonal wave. I don't have it here. But it was published in *Cycles* for June, 1951. You can see it there. I always try to publish actual figures as well as the percentages above and below trend, in the original stories."

'One thing worries me,'' said Robert, "I should think it would be horribly disconcerting to management or anybody who was trying to use this information to have it come true time after time and then suddenly have a high where a low should be, or vice versa, or have a high or a low come early or late."

"My dear fellow!" I said. "Forgive me, but you miss the point! I'm not trying to tell you how to *use* the stuff. That's another story! What I am trying to do is to prove to you that, time and time again, we have regularity too great to be ascribed to chance. Therefore it must have a cause—a knowable cause. And until we know that cause, and how it operates, we'll not know all we need to know about our subject matter!"

"I've shown you just *one* chart to prove my point that these cycles repeat too often to be the result of chance. I have dozens here-------

'Oh, my God, no!'' said Robert, "I'm dizzy already. Next Sunday perhaps. For now, lets go see if the girls don't have some food. Shall we?"

E.R.D.

THE 22-YEAR CYCLE

IN

INTERNATIONAL CONFLICT, 599 B.C.-A.D. 1950

"You look pleased," said my wife at luncheon yesterday.

"I am," I said.

"What's it all about?" said she.

"It's these war cycles I've been working on, I'm quite excited!"

"Coming out well?" she asked.

"Well, I can't tell for sure, but it looks so. You see, two or three years ago I traced a 22-year cycle in the index of international battles back to 1400. That made 25 repetitions of the cycle. It looked to be about 22 1/7 years long [*Cycles* for February, 1951].

"Yesterday I traced it back 600 years more to about 800. It was there, clear as anything, only, with 50 repetitions to work with instead of 25, I was able to refine its length a little. Over the 1150 years it looked like 22 years instead of 22 1/7 year. (That means 22 years from peak to peak, of course.)

Back to 599 B. C.

"Then, this morning, I started at the other end of the series—the figures go back to 599 B. C.—and started to work them forward. And Jove! if the peaks from 599 B. C. to the year 1 didn't fall exactly where they ought to fall, projecting yesterday's timing back 1400 years! They fall right into place over the whole span of 600 years!!

"All that's left now is the gap from year 1 to the year 800. If *they* fall into place it'll be the longest continuous series of waves I've ever found. Two thousand five hundred years! One hundred sixteen repetitions of the cycle!"

"I hope it comes out," she said.

"To make a long story short, it did!"

Don't let my conversation with my wife give you the idea that this cycle is perfectly regular like clock work, all the way back. There are times when it is temporarily pushed around and obscured by randoms and by other cycles. However, there are ways of filtering out these distortions. (The idea is much the same as getting rid of haze by a color filter on a camera.) When this is done you can see the 22-year cycle plain as anything underneath.

Length 21.95 Years

The length of the cycle, as nearly as I can measure it at the present time, is 21.95 years long. Sometimes, for relatively short periods of time, it runs a little short. Sometimes it runs a little long. It's running a little long now. That means the crests come a little later now than you would expect according to the typical time as established by the whole 2,500 years.

Ideal time of the next high is 1959.2. That's the *ideal* time for maximum number and intensity of international battles. However, as I said above, this cycle is running just a little long now and crests are due to come a little late. About 1963 or 1964 for the next crest, I should say.

However, don't get the idea that by a knowledge of this one cycle you will be able to time the next period of major international conflict. It isn't as easy as that.

Typically, troughs are about 25% below trend, crests are about 33 % above trend in each half of the 2500 year period used for the analysis.

The important things are:

1. We have here a cycle which, in my opinion, is incontestably significant.
2. The continuous presence of a cycle of this length for 2500 years explodes the idea that wars come when a new generation grows up which does not know the horror of war. Behavior resulting from such a cause could not *possibly* be as regular as that which we find.
3. The evidence suggests instead that one of the major causes of war, if not *the* major cause, may be mass hysteria (or combatativeness) which occur at rhythmic intervals.
4. A person might guess that the causes of the hysteria or increase of tension are cyclic forces akin to those with which you are already familiar.
5. If there is any reasonable possibility that these ideas might have merit, there is NOTHING more important than finding out for sure one way or the other.
6. If investigation proves that cyclic forces are a major cause of war, we must learn (a) what causes the cyclic forces, (b) how they operate, and (c) how to control them.

E.R.D.

How Wars Start

The children were in the midst of a free-for-all when father unexpectedly entered the room.

"Tommy, who started this?" he asked.

"Well," replied Tommy. "It all started when Albert hit me back."

CYCLES IN RAINFALL

AT

SANTA BARBARA, CALIFORNIA, 1867-68—1954-55

by Gerould T. Lane

THE rainfall at Santa Barbara has averaged 17.91 inches per year for a period of eighty-seven years. More than three quarters of the yearly rainfall has come in four months, December through March, with the greatest amount occurring in January, which has had an average of more than four inches, or more than twenty-two percent of the yearly total.

It is clear to everyone that there is a one year cycle in Santa Barbara rainfall. The peak of this cycle is in January, and the trough in July. However, this does not mean that there will be four inches of rain each January, or that each January will be the wettest month of the year. During January 1914, there were 15.91 inches of rain, whereas in January 1928 and January 1948, there was no measurable precipitation.

In searching for cycles of greater lengths than one year, it must be realized that again we are dealing with averages, and no matter how true the cycles may be when tested by averages, the individual peaks and troughs can not be predicted exactly, as to their timing and amplitude.

These cycles become very clear as we separate each one from the others. The method is to depress all cycle lengths other than the one desired. Such an operation will also depress all random forces that have wave lengths different from the one desired.

It should be noticed that years are lost at each end of the series as a result of making moving averages. As further calculations are made to find other cycles, more years are lost at each end of the series. Cycle analysis depends on comparing, in some manner, each point or year with points or years, not only before, but afterwards.

If the shorter cycles continue as in the past, we may expect the peaks of the 2- & 3-year cycles in the season of 1955-56, but we can not be sure of their strengths or amplitudes. A delay of a few months in their timing, would bring them during the summer months, when no great amount of rain is probable, due to the pronounced seasonal cycle.

The 5.2-year cycle is due in the season of 1956-57, and should have increased amplitude, although it is possible that it may come one year earlier or one year later, due to the influence of other cycles or random forces.

The longer waves show but small changes in amplitude over a period of one year, so we may expect that, on the average, there will be much greater rainfall during the next ten years. If any one year is much higher or lower than expected, it will probably be balanced by a change in the opposite direction in the following years.

4060 Sonriente Road
Santa Barbara, California

G.T.L. May 18, 1955.
Rev. Aug. 1, 1955.

RAINFALL CHART

At Santa Barbara, California.

Chart 1.

SBR-TS6-A

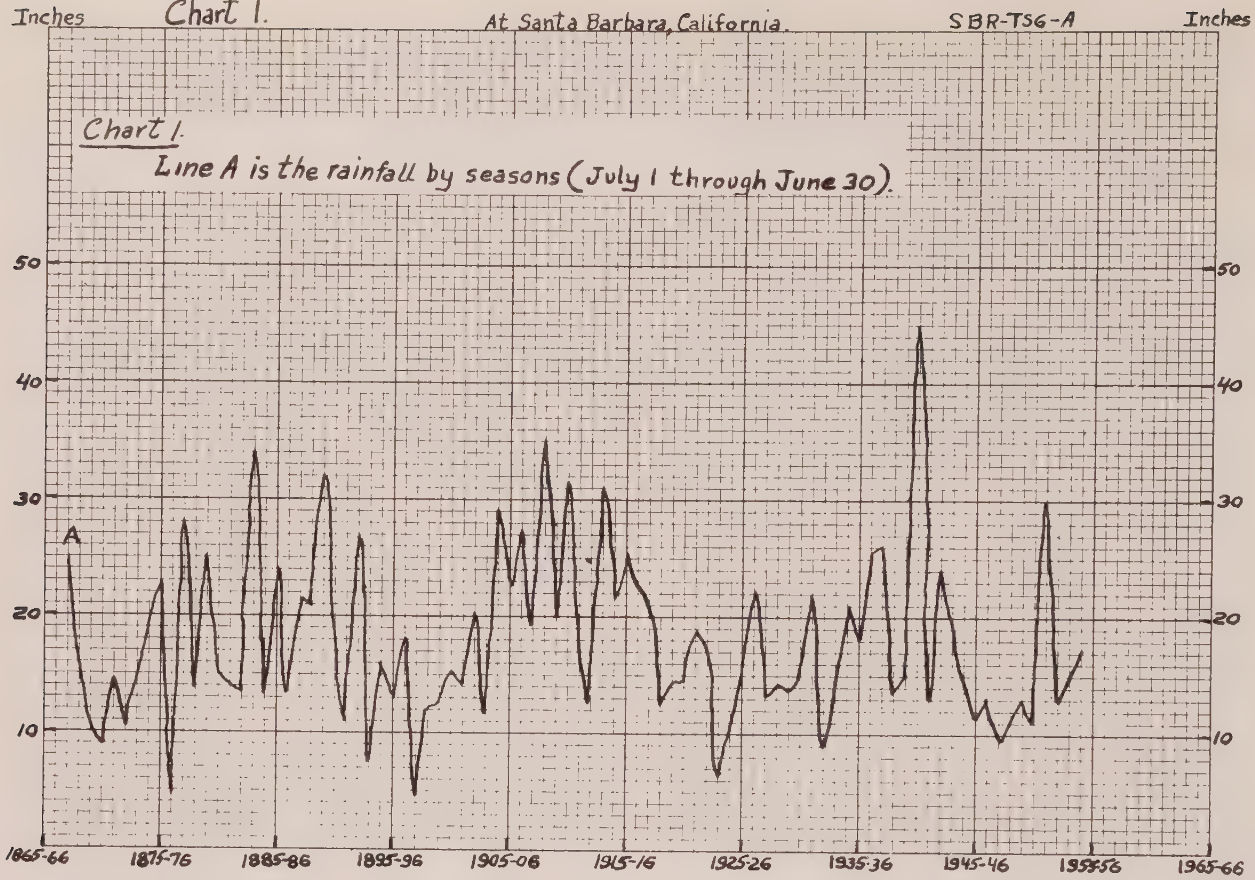


Chart 1.

Line A is the rainfall by seasons (July 1 through June 30).

G.T.L. May 18, 1955.
Rev. Aug. 1, 1955

RAINFALL CHART

At Santa Barbara, California

Chart 2.

SBR-TS6-CD

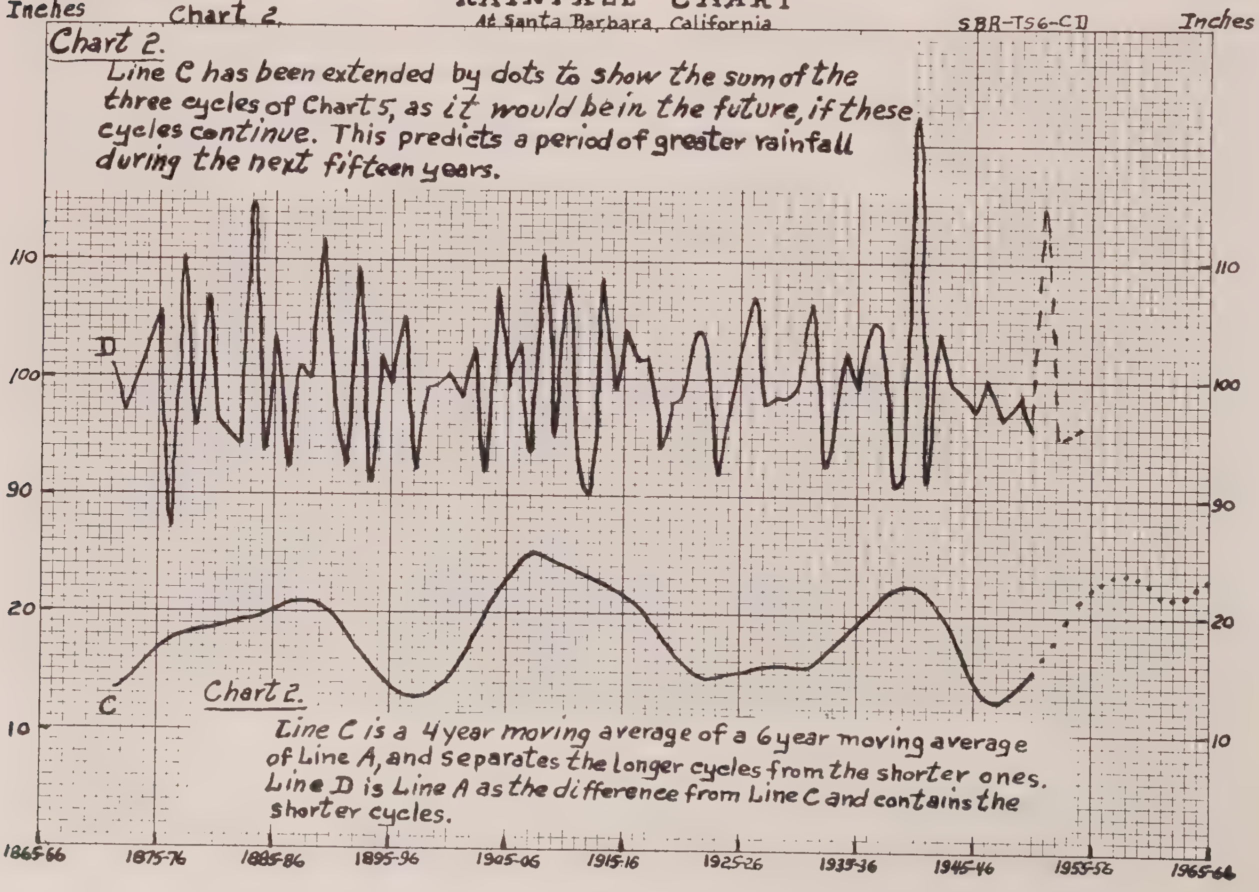
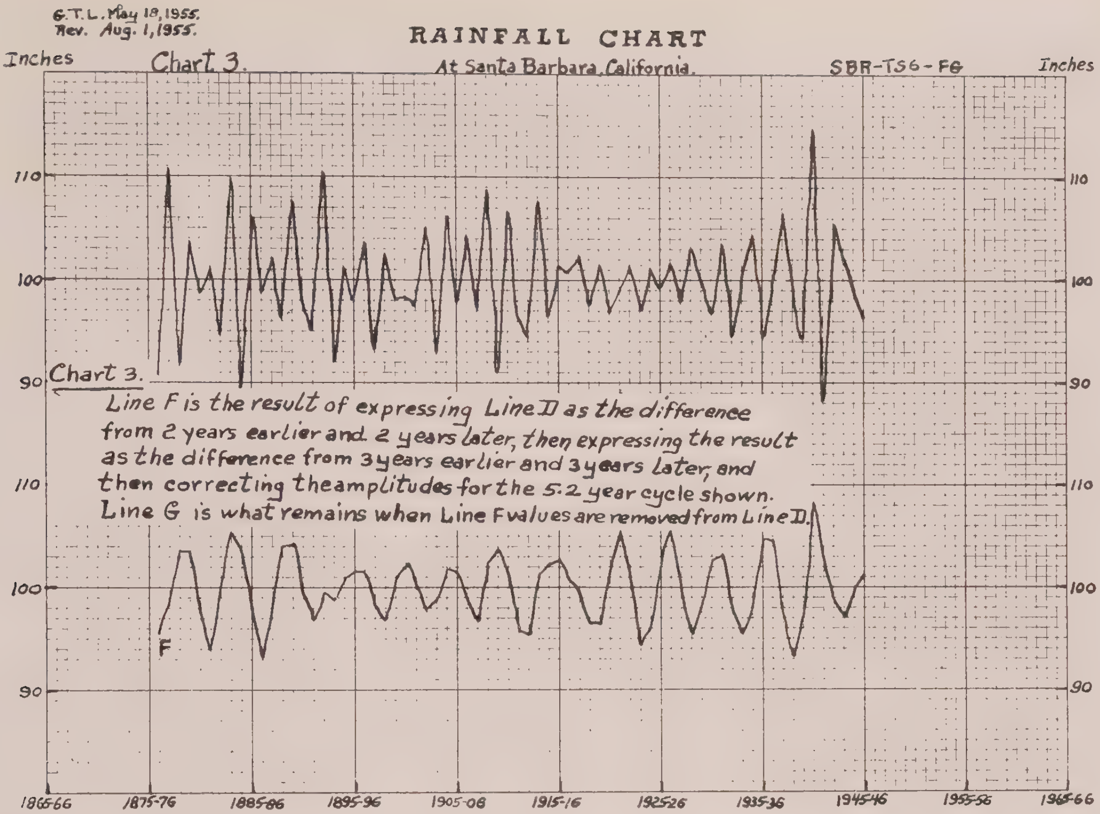


Chart 2.

Line C has been extended by dots to show the sum of the three cycles of Chart 5, as it would be in the future, if these cycles continue. This predicts a period of greater rainfall during the next fifteen years.

Chart 2.

Line C is a 4 year moving average of a 6 year moving average of Line A, and separates the longer cycles from the shorter ones. Line D is Line A as the difference from Line C and contains the shorter cycles.



G.T.L. May 18, 1955.
Rev. Aug. 1, 1955.

RAINFALL CHART

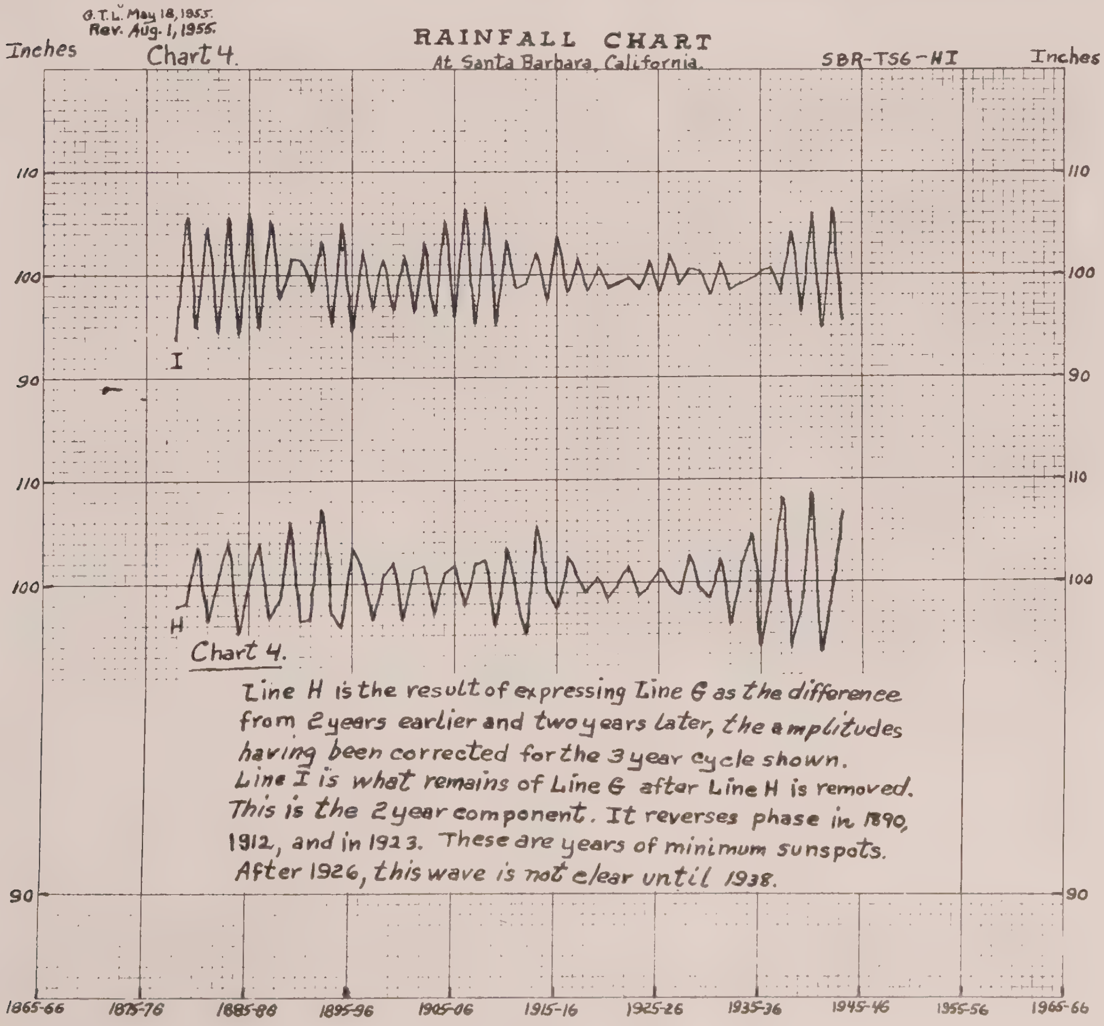
At Santa Barbara, California.

Chart 3.

SBR-TS6-FG

Chart 3.

Line F is the result of expressing Line D as the difference from 2 years earlier and 2 years later, then expressing the result as the difference from 3 years earlier and 3 years later, and then correcting the amplitudes for the 5.2 year cycle shown. Line G is what remains when Line F values are removed from Line D.



G.T.L. May 18, 1955.
Rev. Aug. 1, 1955.

RAINFALL CHART

At Santa Barbara, California.

Chart 4.

SBR-TS6-HI

Chart 4.

Line H is the result of expressing Line G as the difference from 2 years earlier and two years later, the amplitudes having been corrected for the 3 year cycle shown. Line I is what remains of Line G after Line H is removed. This is the 2 year component. It reverses phase in 1890, 1912, and in 1923. These are years of minimum sunspots. After 1926, this wave is not clear until 1938.

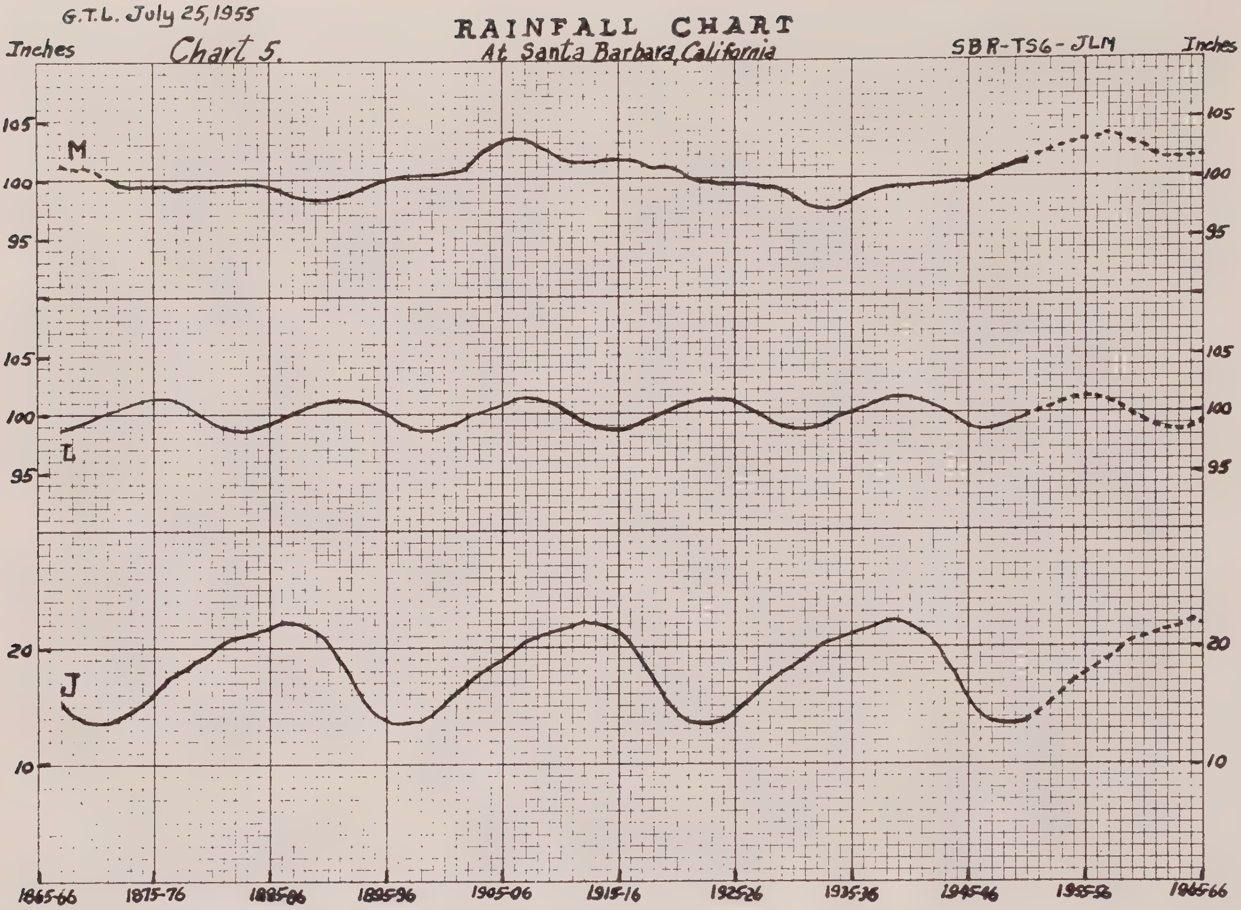


Chart 5.

This chart shows the 3 components of Line C of Chart 2. Line J is an average of the 3 waves of Line C and represents a 26 year cycle, that may be caused by the joint action of the 5.2 year cycle with the 1 year or seasonal cycle. Line L is the average of 5 waves, that are very clear after Line J is removed from Line C, and represents a 16 year cycle. Line M is what remains and is a 52 year wave, that appears to be repeating.

Letters

A Vice Consul to Siam Reports Amazing Verification of Some Cycle Knowledge of a Buddhist Sage.

Dear Mr. Baekeland:

Seven years ago in the interior of Thailand (Siam), a Yogi sage told me something during the course of a long and interesting conversation.

Vice Consul in Siam

I was a Vice Consul in the diplomatic service, and found some entertainment delving into the local philosophy - Buddhism, and through this, was induced to meet this very respected sage.

At that time I rejected and dismissed something he told me, in fact, the most important data he wished to pass on to me. It was quite beyond what I could accept. It had to do with cycles - very precise cycles - in human behavior. And which allowed for uncanny predictions. Or so he said, then.

I argued against his thesis, with some emotion. In looking back now I can see that I was quite disturbed because he was threatening some rather basic beliefs in me. Probably in deference to my anxiety, he desisted, we changed subject, and parted amiably.

Four years passed, with my having almost completely forgotten his discourse on the periodicities and predictabilities of human behavior.

An Astounding Event

Then, an astounding thing happened. An event which has greatly altered the entire course of my life since, and which has resulted in the channeling of much time and effort into research on this very subject.

But first - a very brief statement on the Yogi's thesis:

The Sage's Wisdom

Human beings are like pendulums, acting and reacting (maintaining a homeostatic balance) in accordance with a cosmic rhythm of energy which we see most simply in the ocean tides. But here's the peculiar thing: Primary nodes of reactions are at 36-37 1/2 hours, and 72-75 hours. Given an incident of stress or conflict at time X, one can predict what the person will *do* 36 hours later (or approximately 3 high tides), and so on, cycle after cycle. Not only predict what a person might do, or how he might *feel* (active verb), but from events like illnesses, accidents, etc., going *backwards* 36-37 hours and 72 hours, one can see spread out the precise reasons why people do what they do.

This Yogi's emphasis was upon human beings as masters of their destinies, self-determined, engineering their respective "fates" with precision, in accordance with deep "subconsious" desires, motivations, which have their origins in painful associations in infancy.

The Event

Now the amazing event: (not quite three years ago).

I was visiting with a Mrs. X (identity available to medical researchers). Time 8 pm, Monday evening. Had just finished dinner, was sitting at the table, Mrs. X had gone into the kitchen. I heard strange noises, looked thru the door, and saw her fumbling, mumbling and terrified. I rushed into the kitchen, asking what was the matter. She stammered a series of nonsense words, without connected meaning. Completely disoriented, both mentally and in muscular movements. I have observed psychotics. Like this. She had "lost her mind."

A Chill Wave of Fear

A chill wave of fear swept over me.

But then - suddenly, and as inexplicably, there flashed into my mind the Yogi's words, so long forgotten. *Look back 36 hours!*

Several nighmarish minutes had passed. I looked at the clock. 8pm. A quick calculation. And I almost shouted at her:

"What happened yesterday morning? Sunday morning at about 8? Where were you? What were you doing?"

The "Miracle"

A "miracle" happened. Her aimless, confused motions, and her gibberish ceased. Her look of terror softened, a light returned to her eyes, and she looked straight at me.

"Why.. yesterday morning, early, .. I took a walk.. and for the first time.. went to the cemetery, and visited his grave.. my husband's grave. You see, he died while I was away in Europe, and I have avoided going ever since my return..."

And just as suddenly, she was her old self again. I directed her to relax on her bed, breathe deeply, and review the walk and its emotions. She has been in fine health ever since.

I was stunned by what I had done, and the possible significance of such time periods, cycles, rhythms became a consuming passion. I told myself that human behavior, with all of its vast ramifications in mis-function and mis-emotion *couldn't* be that simple - sort of delayed-action conditioned reflex. But from that evening, at any and every opportunity, I have sought to verify, or disprove, this 36-37 1/2 hour and 72-75 hour cycle of behavior.

Three Year's Work

Briefly - I report what I have done over the past three years:

a) a thousand case histories which *verify* it, and covering illnesses, accidents, conflicts and deaths - and of great variety.

b) many hours of study of tidal rhythms for possible correlation with time intervals found (varying from 35 1/4 to 39 hours).

c) a considerable unfolding of insight into my own "subconscious" motivations, with gratifying changes in my personality.

d) an intensive search of technical literature - in the abstracts of biology, biochemistry, physiology, neurology, pathology, immunology, psychology, medicine, etc., with an extracting and charting of about 500 reports suggesting these cycles, these time periods, between "cause" and "effect" in almost every aspect of life-phenomena.

e) Predictions? Common in my own personal family life, as far as emotional relations, feelings.

On one occasion, upon hearing of a certain occurrence, I said I'd hate to think of what "x" might do Friday afternoon about 5 pm. On Friday afternoon at precisely 5 pm "x" hung himself.

Why People Do What They Do

For me, now, after three years of much investigating and researching, this cyclical rhythm of human behavior, action-reaction, pendulum of conflict (stress) and resolution - and by this knowledge the pin-pointing of *why* people *do* what they do (there appear to be no "accidents") (nor do illnesses "just happen") is all a-b-c facts.

Applied, with respect to medicine and psychiatry - I have already demonstrated to my own satisfaction that it is revolutionary.

Idea Unacceptable

Possibly for that reason it is so unacceptable. I have presented this data in detail to two eminent directors of research: one in the field of aviation psychiatry, the other in cancer. Both were obviously deeply affected by the evidence I showed, followed the reasoning and were apparently quite excited - *during* our talks. But both shied away, after a (sleepless?) night, and quickly rejected the subject, just as I did seven years ago.

A number of friends and letter-acquaintances have been induced to use this knowledge in their own advancement in self-insight, and have written me of their experiences and contributed documented case histories.

An Example

One of the heartaches in this pasttime is of this order: Somebody complains of (let us say) a sudden headache. I note the time, and ask them what happened at such and such a time (36-37 hours previous). They appear startled, may confess other emotional incident and a few minutes later they come by and comment - the headache's gone! How did I know about their private life? A brief explanation. Expressions of disbelief, laughter, dismissal, and they forget about the whole thing. Later on more troubles, psychosomatic, pains, accidents, injuries, or what-not... But they *refuse* to remember and-or use this time-rhythm data even though they've had at least one effective demonstration.

So now we can quote from the psychiatric textbooks. People *don't want to know* such revealing truths about themselves. It can be quite disturbing. It touches on very painful conflicts. There is resistance.

Thus it is.

Multiple Cycles

Now, this 12 1/2 hour unit, its multiples - 36-37 1/2 hours, 72-75 hours, 6 days, 9, 12, 15.. it appears that there are bigger nodes, harmonics of multiples, with larger ebbs and flows, possibly with mass-action principles involved. My investigations are still largely with the prime units.

I have a sizeable monograph, with history, discussion, case histories, charts, documentation from the technical literature, largely written. But, frankly, until I read your pamphlet on the Foundation for the Study of Cycles, I was beginning to conclude from my personal experience thus far that my work was destined to gather dust.

I made an effort in Washington, DC, inviting attention and investigation on the part of C.I.A., the Department of Health, Education and Welfare, the National Security Council, the Committee on Medical Sciences (R&D) of the Department of Defense, the Operations Coordinating Board, and the Human Resources Research Office of the George Washington University. Nothing but polite replies in the negative.

Pilot Study Project Needed

Probably of greatest importance is a pilot study project, set up where there is a massive flow of cases of all types - a private or industrial hospital, police court, emergency clinic, etc., where subjects can be queried, and histories documented for analysis. Observers, tape recordings, etc.

It is my earnest desire that you, Mr. Baekeland, and the Foundation you head, investigate the data, cases and documentation I have complied, and make possible such research as is necessary to clarify this more fundamental unit rhythm of human behavior. This may contribute much to the understanding of the larger cycles in which there is so much economic interest.

Very sincerely yours,
Dwight H. Bulkley

3918 Beech Street
Cincinnati 27, Ohio

Table 1

	Case I	Case II	Case III	Case IV
MERCURY -				
Venus:				
Earth	.352	.1760		
Mars	.325	.1625		
Jupiter	.303	.1515		
Saturn	.301	.1505		
Uranus	.300	.1500		
Neptune	.299	.1495		
Pluto	.299	.1495		
Earth:				
Mars	.295	.1475		
Jupiter	.277	.1385		
Saturn	.275	.1375		
Uranus	.275	.1375		
Neptune	.274	.1370		
Pluto	.274	.1370		
Mars:				
Jupiter	.260	.1300		
Saturn	.259	.1295		
Uranus	.258	.1290		
Neptune	.257	.1285		
Pluto	.257	.1285		
Jupiter:				
Saturn	.244	.1220		
Uranus	.244	.1220		
Neptune	.243	.1215		
Pluto	.243	.1215		
Saturn:				
Uranus	.243	.1215		
Neptune	.242	.1210		
Pluto	.242	.1210		
Uranus:				
Neptune	.241	.1205		
Pluto	.241	.1205		
Neptune:				
Pluto	.241	.1205		
VENUS -				
Earth:				
Mars	1.163	.5815	6.33	.640
Jupiter	.924	.4620	3.44	.407
Saturn	.903	.4515	2.94	.391
Uranus	.895	.4475	2.75	.386
Neptune	.892	.4460	2.70	.383
Pluto	.890	.4450	2.69	.382
Mars:				
Jupiter	.759	.3795	1.546	.503
Saturn	.745	.3725	1.678	.478
Uranus	.739	.3695	1.745	.469
Neptune	.738	.3690	1.761	.467
Pluto	.737	.3685	1.770	.465
Jupiter:				
Saturn	.638	.3190	.671	.609
Uranus	.634	.3170	.681	.593
Neptune	.633	.3165	.684	.590
Pluto	.633	.3165	.684	.588
Saturn:				
Uranus	.624	.3120	.637	.612
Neptune	.623	.3115	.640	.608
Pluto	.623	.3115	.641	.606
VENUS -				
Uranus:				
Neptune	.619	.3095	.623	.616
Pluto	.619	.3095	.623	.614
Neptune:				
Pluto	.618	.3090	.618	.616
EARTH -				
Mars:				
Jupiter	1.445	.7225	45.5	.733
Saturn	1.395	.6975	33.3	.683
Uranus	1.374	.6870	19.2	.663
Neptune	1.368	.6840	17.8	.658
Pluto	1.366	.6830	16.7	.656
Jupiter:				
Saturn	1.063	.5315	1.156	.984
Uranus	1.050	.5250	1.186	.943
Neptune	1.047	.5235	1.193	.933
Pluto	1.046	.5230	1.196	.929
Saturn:				
Uranus	1.024	.5120	1.059	.990
Neptune	1.020	.5100	1.066	.978
Pluto	1.019	.5095	1.068	.975
Uranus:				
Neptune	1.009	.5045	1.017	1.000
Pluto	1.008	.5040	1.024	.996
Neptune:				
Pluto	1.005	.5025	1.008	1.002
MARS -				
Jupiter:				
Saturn	2.11	1.055	2.52	1.825
Uranus	2.07	1.035	2.67	1.689
Neptune	2.06	1.030	2.71	1.658
Pluto	2.05	1.025	2.72	1.645
Saturn:				
Uranus	1.96	.980	2.10	1.845
Neptune	1.95	.975	2.13	1.808
Pluto	1.94	.970	2.14	1.792
Uranus:				
Neptune	1.92	.960	1.946	1.883
Pluto	1.91	.955	1.953	1.866
Neptune:				
Pluto	1.90	.950	1.908	1.887
JUPITER -				
Saturn:				
Uranus	16.2	8.10	35.2	10.59
Neptune	15.6	7.80	44.6	9.43
Pluto	15.3	7.65	48.8	9.07
Uranus:				
Neptune	13.3	6.65	15.0	11.9
Pluto	13.1	6.55	15.5	11.3
Neptune:				
Pluto	12.6	6.30	13.1	12.2
SATURN -				
Uranus:				
Neptune	40.2	20.10	61.3	29.7
Pluto	38.5	19.25	70.9	26.5
Neptune:				
Pluto	34.6	17.30	38.6	31.3
URANUS -				
Neptune:				
Pluto	147.0	73.50	256	101

Error: As explained in the director's letter, when the above table was printed in the November report, as part of an article called "Bisection Periods of the Planets," we got some of the decimal points mixed up for Case II (Case II values are just half of the values of Case I). The table with the decimals in the right place is reprinted above.

GLOSSARY

Cycle, coming from a Greek word meaning circle, implies coming around to the place of beginning. Strictly speaking, in the word itself there is no necessary implication of regularity, but the word is often used loosely to denote rhythm or periodicity.

When the word cycle is modified by a time interval such as 6-year cycle, 20-month cycle, 17-day cycle, the phrase usually means a cycle that recurs with reasonable regularity. In other words, it denotes rhythm.

Rhythm, coming from a Greek word meaning measured time, implies a beat, or a tendency toward perfect regularity or periodicity. It is what we really mean on most of the occasions when we use the word cycle.

Cycle analysis, as we are using the term in this bulletin, should really be called rhythm analysis, as we are concerned with **rhythmic cycles**--cycles that recur with a beat.

Periodicity, in the strict sense, is the quality of being regularly recurrent. It is a quality not often found in nature. The ideal cycles which are often added to a chart to diagram a rhythmic cycle are true periodicities.

A **wave** is one single cycle or undulation. Waves have **frequency**, **amplitude**, **period**, and, at least when they represent harmonic curves, **phase**.

Frequency is the number of complete vibrations to and fro--i.e. waves--per second It is a term not used by cycle analysts when dealing with cycles that are over a second in length.

Amplitude is the extent of a vibratory movement measured from the average position to an extreme position; that is, it is the height or depth of the wave above or below the axis around which the wave oscillates.

Positive amplitude is the distance above the axis, **negative amplitude** is the distance below the axis, **overall amplitude** is the sum of the positive and negative amplitudes. Amplitudes may be expressed in absolute units or as a percentage of the value of the axis.

Period is the interval of time required for a periodic motion to complete a cycle and begin to repeat itself. It is the length of the wave from crest to crest or trough to trough or from some other point on the curve taken as the **epoch**. The **epoch** is the point on the curve chosen as the beginning of the wave. In physics and astronomy it is usually taken as the point where the curve crosses the axis on its upward motion, but it may be any other point as well.

Phase, in a simple harmonic curve, is the point or stage in the period to which the oscillation has advanced considered in relation to a standard position or assumed instant of starting. It is measured along the axis, usually in degrees. By extension of meaning, **positive phase** is therefore the part of the wave above the axis or trend, and **negative phase** is the part of the wave below the axis or trend. When the crests (or troughs) of two or more different series of waves come at the same time, the waves are said to be **in phase** with each other. When the crests of one series of waves coincide with the troughs of another series, the series are spoken of as in **reverse phase**.

A **simple harmonic curve** referred to once or twice above, is the curve you would get by tracing the motion of a pendulum upon a piece of smoked paper that was moving at uniform speed at right angles to the direction in which the pendulum was swaying back and forth. It is perfectly simple, regular, and symmetrical and, in mathematical study, is usually referred to as a **sine curve**. A single oscillation is called a **sine wave**.

A **rectilinear** or **saw-tooth wave**, on the other hand, is a wave the sides of which are straight lines; in other words, zigzag.

Trend is the tendency of data in a series to increase or decrease during a long period of time. The expression, "a long period of time," cannot be defined except relatively. If you are dealing with hourly figures, you might consider trend as the general direction over the past 30 or 40 hours. With yearly figures "trend" might mean the general tendency over the past 100 years or more.

An **average** is a typical value which tends to sum up or describe a number of figures. There are at least five different kinds of averages commonly used by statisticians; but the one which ordinary folk think about when they hear the word **average** is the one computed by adding all the items together and dividing the total by the number of items. Thus, if we have four items, 10, 12, 11, and 13, the average of these items is 10 + 12 + 11 + 13 (46) divided by 4, or 11½. An average of this sort is more accurately called the **arithmetic mean**.

An arrangement of numbers is called a **series**.

When the numbers with which we deal represent events which occur one after another in time, the arrangement is called a **time series**. Thus, in the example above, if 10, 12, 11, and 13 represent the price of cotton for each of four consecutive years, or represent the number of accidents on each of four consecutive days, you would call the numbers by this name--a time series.

You could still average the numbers and say, for example, that the average price for all four years was 11½ cents, or that during the period there was an average of 11½ accidents per day, as the case might be.

You could also say that the average price for the first three years was 11 cents, (10 + 12 + 11 (33) divided by 3) and that the average price for the last three years was 12 cents (22 + 11 + 13 (36) divided by 3).

A **moving average** is a succession of averages secured from a series of numbers by dropping the first number (item) in each group averaged and including the next number in the series after the group, thus obtaining the next group to be averaged, and so on.

Thus, when you averaged the first three numbers of our time series (10, 12, and 11) and got 11, and then dropped the first number (10) and added the fourth number (13) and averaged again and got 12, you were constructing a moving average

Because you were averaging three items at a time, you would call the result a 3-item or 3-term moving average. If the items represented yearly values you would call the result a 3-year moving average. If the items represented daily values, you would call the result a 3-day moving average.

The **moving total** is the series of successive totals from which the moving average is computed. For example: When , above, you added 10, 12, and 11 to get 33, and then added 12, 11, and 13 to get 36 (as a step in the task of getting 11 and 12, the two terms of the moving average), you were computing a moving total.

THE MODIFIED GEISINGER INDICATOR

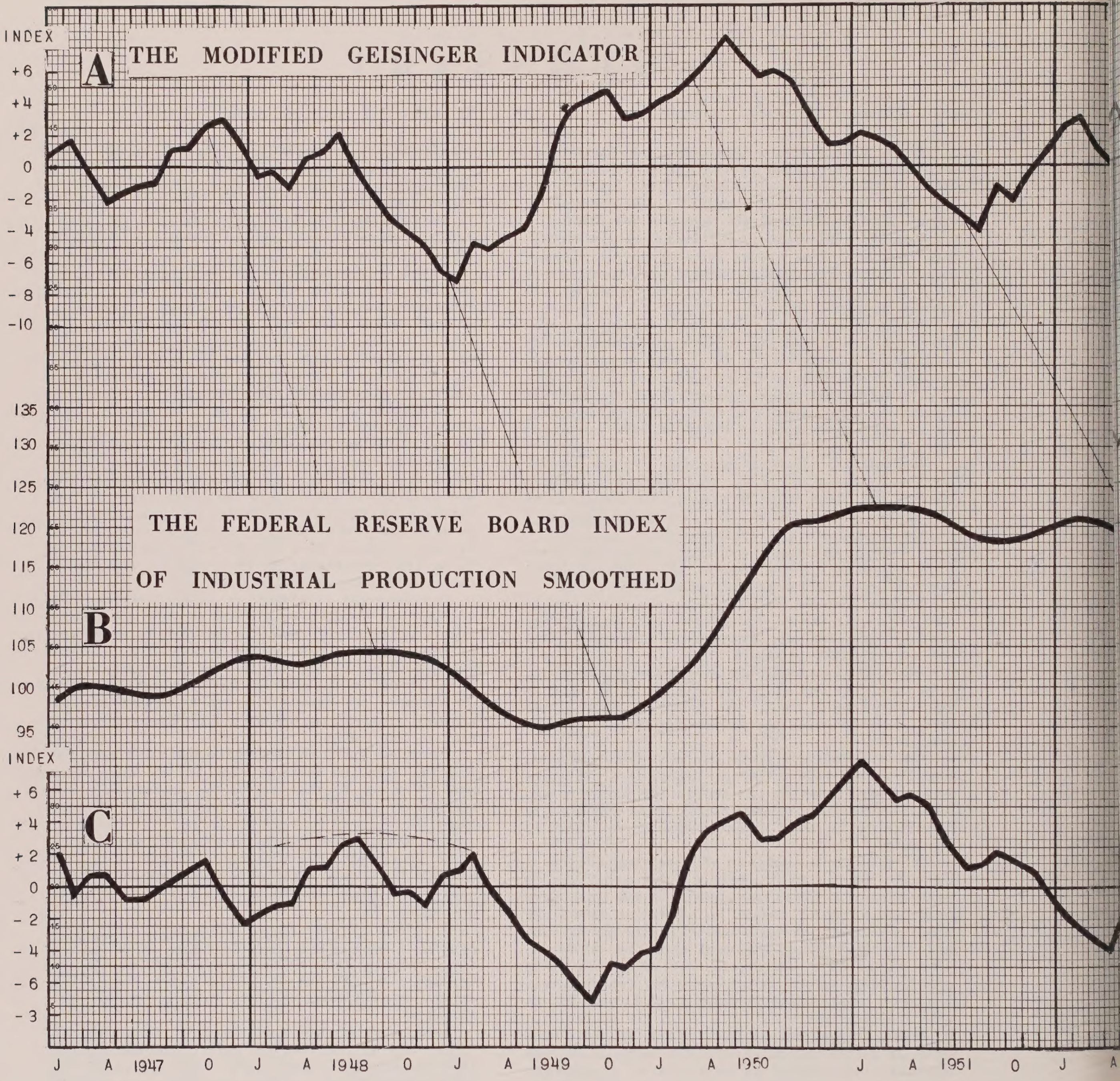
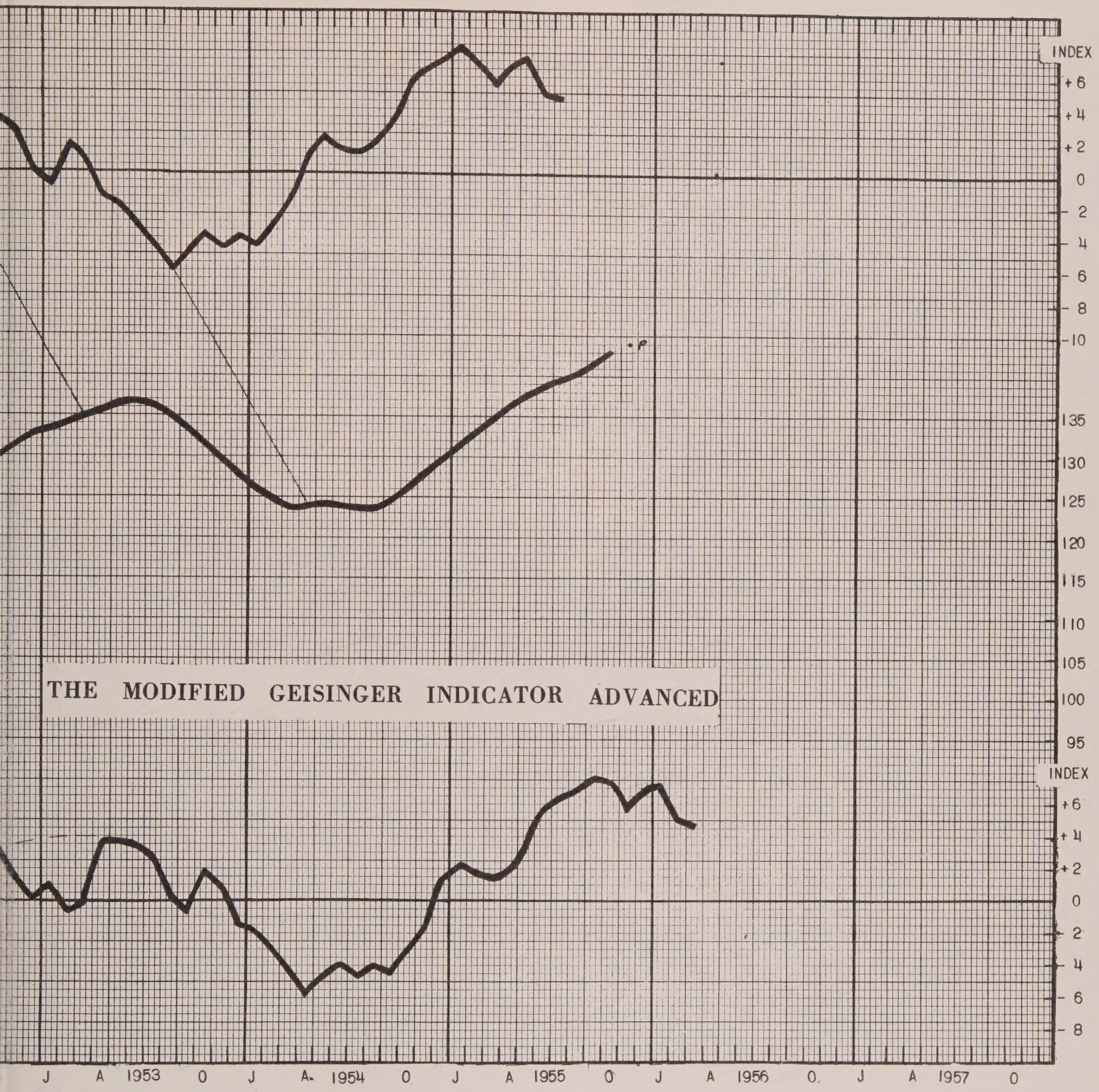


Fig. 1 Curve A. The Modified Geisinger Industrial Production Indicator Curve. This curve is derived from certain figures which are published monthly in the *Survey of Current Business*. It tends to turn about 8 months before the Federal Reserve Board Index of Industrial Production.

Curve B. The Federal Reserve Board Index of Industrial Production adjusted for seasonal variation and smoothed by a 3-month moving average. The value for the latest available month is shown by a dot.

Curve C. This curve is the Modified Geisinger Industrial Production Indicator Curve advanced by 8 months. This process projects part of the curve into the future. If the relationships of the past continue, the projection gives some hint of what may happen to the Federal Reserve Board Index of Industrial Production (Curve B).

OF INDUSTRIAL PRODUCTION



THE FORECAST

The Federal Reserve Board Index of Industrial Production shows renewed strength. The preliminary value of this index for November is 144.

The Modified Geisinger Indicator however continues to decline. The final figure for July 1955 (which when projected, becomes March 1956) is 4.7.

In my opinion this behavior suggests that the Federal Reserve Board Index may level off and decline during 1956.

E. R. D.

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